

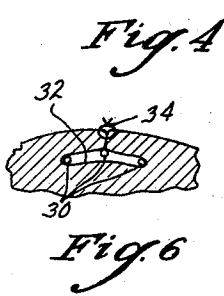
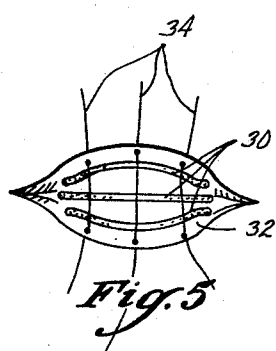
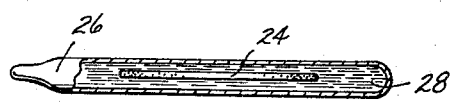
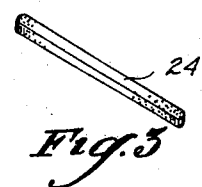
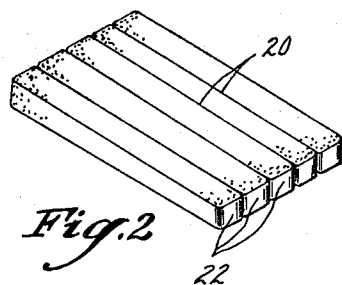
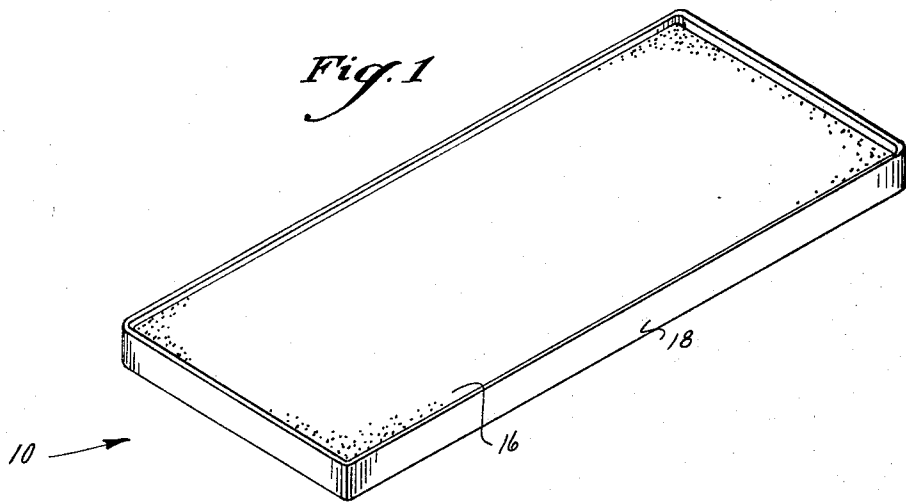
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3,266,054

METHOD FOR TREATMENT OF HERNIAS

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METHOD FOR TREATMENT OF HERNIAS

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1 Claim. (Cl. 128—334)

This invention relates to the treatment of abdominal wall defects and, more particularly, to a novel method and apparatus for providing a minor procedure for such treatment, thus avoiding drastic surgery.

It is an object of the present invention to provide an effective method for treating hernia and other abdominal wall defects which replaces drastic surgery and can be accomplished by means of local anesthesia.

Another object of the present invention is to provide a method and apparatus for treatment of the above type in which a sclerosant fragment is implanted in the human tissue in the vicinity of the abdominal wall defect, thus inducing the proliferation of connective tissue to form a large fibrosis which reinforces the tissue surrounding the defect.

Still another object of the present invention is to provide a method for manufacturing sclerosant fragments for implanting in the tissue in the vicinity of the abdominal wall defect to stimulate the proliferation of hard connective tissue.

A further object of the present invention is to provide a sclerosant fragment of the type described which will induce the proliferation of hard connective tissue, and which will be slowly absorbed by the host tissue over a period of two or three months, after which a hard connective tissue results for reinforcing the area surrounding the abdominal wall defect.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

FIGURE 1 is a perspective view of apparatus for manufacturing sclerosant fragments used in accordance with the present invention;

FIGURE 2 is a fragmentary perspective view of a gelatin sheet manufactured with the apparatus shown in FIGURE 1, and cut into long narrow slivers;

FIGURE 3 is a perspective view of one of the slivers shown in FIGURE 2, after having been dried, hardened, and shrunk;

FIGURE 4 is a side elevational view, with parts broken away, of a vial containing the fragment shown in FIGURE 3 immersed in a formaldehyde solution to form a dissoluble sclerosant fragment for implanting in abdominal tissue;

FIGURE 5 is a fragmentary top plan view of an incision, within which a group of sclerosant fragments have been implanted, and with sutures being applied to close the incision; and

FIGURE 6 is a transverse cross sectional view of the incision shown in FIGURE 5, with the sutures having been drawn taut and tied, completely implanting the sclerosant fragments within the incision.

Referring now to the drawing, apparatus 10 in FIGURE 1, is shown to include a shallow tray 18 for manufacturing sclerosant fragments for use in accordance with the present invention. This apparatus 10 includes a shallow tray 18, which forms a flat mold approximately two inches wide and six inches long, one-quarter of an inch deep, into which a liquid gelatin solution is poured. The gelatin solution preferably consists of three grams of powdered pure gelatin and twenty-five cc.'s of distilled water. These ingredients are placed in a beaker and placed in a hot water bath until the gelatin has been com-

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pletely dissolved. To this mixture, one cc. of glycerin is added, and the solution then poured into the tray mold 18.

When the gelatin has set and solidified, it is removed in a sheet from the mold and cut transversely, by means of transverse cuts 20, into fragments two inches long, one-quarter of an inch thick, and one-quarter of an inch wide. These fragments are then dried at eighty degrees Fahrenheit, following which the dried pieces are hardened, with some degree of elasticity, and shrunken in size to approximately one and three-quarters of an inch long by one-eighth of an inch thick, and one-eighth of an inch wide, thus producing individual fragments 24, as shown in FIGURE 3. These fragments 24 are then placed individually into glass vials 26 containing a formaldehyde solution 28 preferably consisting of one part of glycerin, two parts of grain alcohol, and two parts of formaldehyde, and the glass vials are flame sealed. The gelatin fragments in this solution thus become saturated with the formaldehyde solution, causing a swelling of the fragments. The absorption of the formaldehyde makes the gelatin bland, brittle, non-melting, and sterile. After twenty-four hours, the fragments are ready to be used.

In the past, surgeons have sought to improve their techniques in the treatment of abdominal wall defects by using various foreign materials, such as silver wire filagree or screening to strengthen the hernial area. In addition, injections of irritant substances, with sclerosant properties, have been used to stimulate a certain degree of proliferation of connective tissue. However, the fact that such injectable irritants are fluids and are absorbed rapidly by the tissue, has minimized the useful effect of such sclerosants, such that a very high number of such injections are required to produce even a slight amount of connective tissue. In accordance with the present invention, however, painful injection of such irritants in the patient are avoided, and the sclerosant fragments are implanted in the tissue as solids, to be slowly dissolved and absorbed by the host body tissue over a period of time ranging from eight to twelve weeks. During this extended period of time, the fragments constantly serve as a sclerosant for constantly stimulating a proliferation of hard connective tissue around the defect, without further treatment or hospitalization of the patient. This tissue forms a large fibrosis, the size of which depends upon the size of the hernial sac and the amount of the sclerosant fragments implanted. This fibrotic patch is eventually absorbed by the organism in two to three months, leaving only enough foundation of fibrosis to greatly reinforce the hernial region.

The gelatin fragments may be provided in various sizes and the strength of the formaldehyde solution can be varied in strength. However, fragments produced in the manner hereinbefore described are versatile for the treatment of most abdominal wall defects.

By way of example, an indirect inguinal hernia may be treated in accordance with the present invention, as follows:

Employing local anesthesia, a small skin incision is made about one and one-half inches long and parallel to Poupart's ligament and over the inguinal canal to expose the aponeurosis of the external oblique muscle, after which the external inguinal ring may be readily located. An incision of the aponeurosis of the external oblique muscle is then made, exposing the inguinal canal wherein is the spermatic cord, the hernial sac and the internal inguinal ring. The hernial sac is completely dissected out, then reduced or invaginated into the abdominal cavity through the internal inguinal ring. Two, three, or more sclerosant fragments, as described above, are then implanted on the top of the invaginated hernial sac. The inguinal canal is then closed, by means of well known

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techniques of surgery with silk, with the fibers of Poupert's ligament, Conjoin tendon and Rectus muscle. As a result, the invaginated hernial sac and the implanted gelatin fragments are buried under the sutures that closes the inguinal canal.

This "burying" technique is of great importance in that it keeps the hernial sac and implanted gelatin pieces completely invaginated and reduced while the local reaction sets in. The reaction, in turn, produces a fibrosis out of the hernial sac and surrounding host tissue, with the result that a fibrotic patch is formed firmly adhered posteriorly to the inguinal canal and internal ring, thus healing the hernia from within.

The local reaction of swelling and soreness will reach its peak in approximately three days after the sclerosant fragments have been implanted. Within a week, most of the soreness is gone and the hard mass of connective tissue surrounding the entire treated area may be palpated by the examining fingers. This mass will be slowly absorbed, being reduced substantially in size in approximately one month, and in approximately three months will have become a firm and strong region.

It will thus be recognized that a method for treating abdominal wall defects has been provided which avoids drastic surgery which is ordinarily required for such treatment. This procedure is accomplished by means of local anesthesia, allowing the patient to walk from the operating room to carry on normal functions immediately after treatment. This reduces the period of convalescence of the patient, reducing cost and expense and time of incapacity.

While this invention has been described with particular reference to the method, technique and sclerosant fragment illustrated, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claim appended hereto.

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Having thus described my invention, I claim as new and desire to secure by Letters Patent:

A method for the surgical treatment of hernia in a patient under local anesthesia comprising the steps of:

- 5 (a) making an incision to expose the inguinal canal which contain the hernial sac and the inguinal ring;
- (b) dissecting out said sac;
- (c) invaginating said sac through said ring into the abdominal cavity;
- 10 (d) implanting a plurality of strips of formaldehyde treated gelatin inside of the invaginated sac; and
- (e) closing a suture at the base and around the sac thus burying said strips in the sac and the sac in said cavity to produce by local reaction a fibrosis in the form of a fibrotic patch firmly adhered posteriorly to the canal and ring whereby the hernia is healed from within.

References Cited by the Examiner

UNITED STATES PATENTS

611,814	10/1898	Millar	260—117
2,039,262	4/1936	Schulte	128—335.5
2,236,542	4/1941	Lukens	128—335.5
2,465,357	3/1949	Correll	167—84

OTHER REFERENCES

Kretzschman: "The Injection Treatment of Hernia," from *Clinical Med. & Surgery*, vol. 42, No. 8, August, 1935, pp. 371—75.

Mason et al.: "Use of Homologous Dura Matter in the Repair of Hernias," from *Archives of Surgery*, vol. 82, 1961, pp. 856—62.

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